CLAIMS

1. A method, comprising the steps of:

(a) providing a device comprising i) a microdroplet transport channel, said channel having one or more hydrophobic regions; and ii) a gas port in fluidic communication with said channel; and

(b) introducing a first volume liquid into said channel so as to create a liquid-containing channel and under conditions such that said first volume of liquid is confined by at least one of said hydrophobic regions so as to create a first terminus; and

(c) introducing a volume of gas through said gas port into said liquid-containing channel under conditions such that said gas divides the liquid in said channel so as to create a second terminus, said first and second termini defining a second volume of liquid.

2. The method of Claim 1, further comprising the step d) moving said second volume of liquid.

3. The method of Claim 2, wherein said second volume is moved into a reaction chamber.

4. The method of Claim 1, wherein said second volume of liquid is in a range between approximately one picoliter and one milliliter.

5. A method, comprising the steps of:

(a) providing a device comprising i) an etched microdroplet transport channel, said microdroplet transport channel having one or more hydrophobic regions; and ii) an etched gas transport channel in fluidic communication with said microdroplet transport channel, said gas transport channel intersecting said microdroplet channel so as to form a junction; and

(b) introducing a first volume liquid into said microdroplet channel so as to create a liquid-containing channel and under conditions such that said first volume of liquid is confined by at least one of said hydrophobic regions so as to create a first terminus; and

(c) introducing a volume of gas through said gas transport channel under conditions such that said gas enters said fluid-containing channel at said junction so as to divide the liquid in said channel and create a second terminus, said first and second termini defining a second volume of liquid.

6. The method of Claim 5, wherein said second volume is less than said first volume.

7. The method of Claim 5, wherein said second volume of liquid is in a range between approximately one picoliter and one milliliter.

8. The method of Claim 5, further comprising the step d) moving said second volume of liquid.

9. The method of Claim 8, wherein said second volume is moved into a reaction chamber.

10. A method, comprising the steps of:

(a) providing a device comprising i) a microdroplet transport channel, said channel having one or more hydrophobic regions; and ii) a plurality of gas ports in fluidic communication with said channel; and

(b) introducing a first volume liquid into said channel so as to create a liquid-containing channel and under conditions such that said first volume of liquid is confined by at least one of said hydrophobic regions so as to create a first terminus; and

(c) introducing a volume of gas through one of said gas ports into said liquid-containing channel under conditions such that said gas divides the liquid in said channel so as to create a second terminus, said first and second termini defining a second volume of liquid.

11. The method of Claim 10, further comprising the step d) moving said second volume of liquid.

12. The method of Claim 10, wherein the distances within said microdroplet transport channel between a given hydrophobic region and said plurality of gas ports define a range of predetermined liquid volumes.

13. The method of Claim 10, wherein the conditions under which said gas divides the liquid in said channel so as to create a second terminus comprises a metering pressure.

14. The method of Claim 11, wherein said second volume is moved into a reaction chamber.